

REMARKS/ARGUMENTS

1. The objection to claim 7 is overcome by adopting language similar to that suggested by Examiner.

2. Claims 1-8 are rejected under 35 U.S.C. §103(a) as unpatentable over Hosoi et al. (EP 0 8888 004 A2). It is noted that Examiner's comments in the Office Action do not appear to be directed to the claims as amended in the Preliminary Amendment to the application.

3. The rejection is based on §103, but only a single reference is applied, namely the Hosoi et al. reference. The abovementioned §103 basis for rejection is traversed, because the claims distinguish in a nonobvious manner over Hosoi et al., EP 0 888 004 A2, and because the Hosoi et al. reference does not suggest or hint at the claimed invention. While there are similarities between the claimed invention and the Hosoi et al. reference, there are significant and patentable differences, as set forth below.

More specifically, the Hosoi et al. reference has a single control loop or circuit for controlling the brightness of the picture. The Hosoi et al. control loop or circuit includes a "synthesizing device" 104 (of FIGURE 3) for generating a brightness signal from the RGB video; an "average brightness level detecting device" 105 which generates brightness on a per-block basis (column 9, lines 47-50); an "average brightness level adding device" 106 for adding together the brightness of adjacent blocks (column 9, line 58 to column 10, line 14); a "comparing device" 107 for comparing the added brightness of each block with a

reference value 108; and a "multiplication coefficient setting device" 109 for generating video multiplication coefficients from the results of the comparison (column 4, lines 30-53; column 10, lines 15-32). The coefficients are used to control the "multiplication device" 110, 111, 112. Thus, the results of the comparison are used to select from among the various modes (100%, 50%) provided by the "multiplication coefficient setting device" 109.

In the Hosoi et al. reference, the brightness addition of mutually adjacent blocks which is performed in block 106 is for the purpose of limiting temperature of video drivers associated with the plasma display panel (column 10, line 58 to column 11, line 29)..

In contrast, the present invention includes a second or additional control loop or circuit for providing the plasma display panel (PDP) with thermal protection (page 9, lines 16-19). The additional control loop or circuit, including "local power measure" block 18 of FIGURE 5, produces a local power (LP) signal for application to a "local temperature estimator" block 19, which estimates local display panel temperature by a method including local power values and the previously estimated local temperature values (page 11, lines 1-7, and more generally pages 11 to 13). The local temperature (LT) signal is applied to a "max local temperature" block 20 to produce maximum temperature (MT) signals, and these are applied to a "max power level selection" block 21 for determining a limiting or maximum allowed power level (PLM). A "Power Level Limiter" block 22, acts in response to both the power level selection signal (PLO) from block 17 and the PLM signal

from block 21. Thus, the power level selection or control signal produced by block 17 of FIGURE 3 of the application in the first control loop or circuit is limited by the second or temperature protecting control loop or circuit of FIGURE 5, as suggested by FIGURE 9.

It will be clear from the above description of the Hosoi et al. reference and the application that the invention as recited in the present claims including calculating temperature from power and previous temperature, and using the temperature calculation to restrict some of the power modes, is completely absent from the Hosoi et al. reference. Since the subject matter of these aspects of present claim 1 is absent from Hosoi et al., Hosoi et al. cannot set forth, suggest, or even hint at the subject matter of claim 1 as a whole. There being no other reference, the matter of claim 1 is patentable over Hosoi et al. in both §102 and §103 senses.

4A. Claim 1 Recites Matter Not Found in Hosoi et al.

Claim 1 recites inter alia

"wherein a local temperature estimation is performed for the corresponding blocks of the display based on said local power values and the previously estimated local temperature values,"

which is simply not found in Hosoi et al. The addition of average brightness levels from adjacent blocks as performed in Hosoi et al. produces brightness information, but does not produce an estimate of local temperature of a display panel as recited in present claim 1 and as supported in the application (page 2, line 31 to page 3, line 4; page 3,

line 10 to page 4, line 2).

In addition, the calculations performed by Hosoi et al. do not include "local power and the previously estimated local temperature values" as set forth in claim 1.

Thus, there is no suggestion in Hosoi et al. to calculate or estimate local temperature of the display, and there is no suggestion to do so using prior values of local temperature. Claim 1 is patentable in view of Hosoi et al. for this reason alone.

The above notwithstanding, claim 1 further recites

"wherein in the estimated local temperature values the maximum local temperature in the display is selected," which again is not found in Hosoi et al. Hosoi et al. do not calculate local temperature, and certainly cannot therefore select the maximum value of local temperature. Thus, claim 1 is patentable over Hosoi et al. for this reason taken alone.

Claim 1 further recites

"wherein a further step of maximum power level limit determination is performed based on the maximum local temperature," which is not found in Hosoi et al., as no calculation of local temperature of the display is made therein.

Claim 1 further recites

"wherein the power level limit is used to restrict the range of selectable power level modes in the power level mode selection process to power level modes

having a power level below or equal to said power level limit."

which is not found in Hosoi et al. Hosoi et al. has a single selectable power level mode, which is the range or set including the values 100% and 50% (and which could include other values). Hosoi et al. select among the available values of this set based on the brightness comparison, but do not select alternative modes, ranges or sets, because there are no other ranges or sets. Thus, claim 1 is patentable over Hosoi et al. for at least this reason alone.

4B. Claims 2-8 Are Patentable over Hosoi et al.

Claim 7 is patentable over Hosoi et al. for any one of the reasons given above in relation to claim 1. Claim 8 is patentable as depending from patentable claim 7.

In general, claims 2 to 6 are allowable as depending from patentable parent claim 1.

In addition, claim 2 recites

"Method according to claim 1, wherein for local temperature estimation of a block, the power dissipation not only of the local block but also of a number of neighboring blocks is taken into account."

Examiner states in relation to claim 2

"... for local temp. estimation of a block, the power dissipation not only of the local block, but also of a number of neighboring blocks is taken into account (col. 10, line 58-col 11, line 29)"

Scrutiny of that portion of Hosoi et al. identified by Examiner does not substantiate Examiner's expression of

what is found therein. More particularly, the Hosoi et al. reference in the stated location does not at all mention temperature or temperature estimation, nor do they mention power, but refers instead to APL (Average Picture Level, see column 2, line 4). Thus, claim 2 is independently patentable over Hosoi et al.

Claim 3 recites

"Method according to claim 1, wherein the maximum local temperature determination for the display is performed once in a number of video frames."

Hosoi et al. makes no mention or suggestion of making his brightness determinations at any rate but once per video frame, and therefore cannot suggest making temperature determinations once in a number of video frames. Claim 3 is thus independently patentable over Hosoi et al.

Claim 4 recites

"Method according to claim 3, wherein the steps of local power value determination and local temperature estimation are performed only for one or more selected blocks of the whole picture frame period."

Hosoi et al. make no suggestion of performing the brightness determination for fewer than all the blocks of the picture, so cannot possibly make clear, suggest, or hint at the making of temperature determinations for fewer than all the blocks of the picture. Claim 4 is patentable over Hosoi et al.

Claim 5 recites

"Method according to claim 3, wherein a picture is divided in 40 blocks and the maximum local temperature

determination is performed once within 40 frames." Claim 5 depends from patentable claim 3, and is patentable for that reason alone. In addition, Hosoi et al. make no suggestion of use of one block of 40 in a picture. Claim 5 is independently patentable for this additional reason.

Claim 6 recites

"Method according to claim 1, wherein the switching between maximum allowed power level limits corresponding to the determined maximum local temperature is controlled with a power level mode against picture power curve that falls if the picture power is increasing and that rises if the picture power is decreasing, and with a delay between falling and rising, respectively rising and falling if the change direction of the picture power value changes." which delay or hysteresis based on the direction of picture power is nowhere suggested in Hosoi et al.

5. For at least the reasons discussed with respect to claims 1-8, reconsideration and allowance of the present claims are requested.

6. No fee is believed to be required for this amendment. Please charge any other fees to deposit account 50-2061.

FOR THE APPLICANT(S)

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